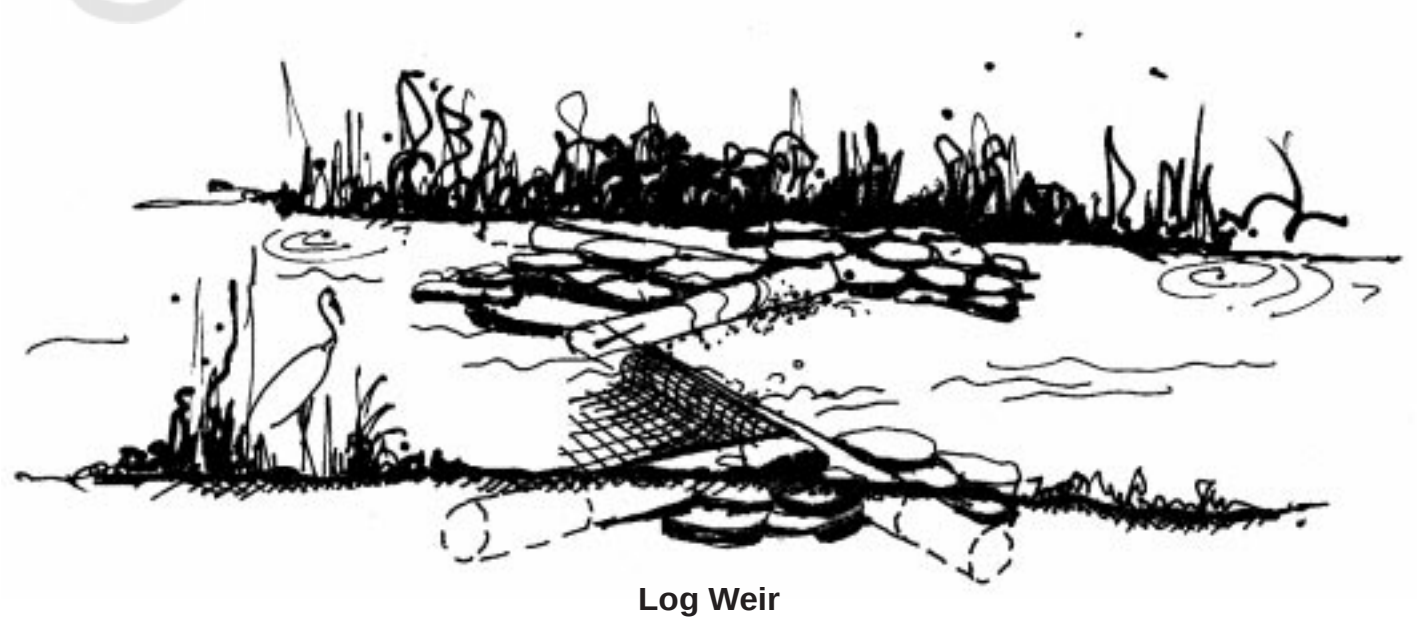
**PRIMARY USE**: To improve habitat for aquatic plants and animals, and contribute to food web dynamics.
**ADDITIONAL USES:** To control bed gradients on degrading streams.

# BOULDER OR LOG WEIR

**What is it?** This is a technique in which boulders or logs are laced across the channel and anchored to the channel bank and/or bed in order to check the water and raise its level for diversion purposes; it is designed to allow overtopping. Also known as: Low Storage Check Dam, Plunge, Overpour. Variations include: Vortex Rock Weir, W Rock Weir, Log-Sill Gravel Trap and V Shaped Gravel Trap, Single Log Dam, Stack Log Dam, Three Log Dam, and K Dam.

## Purpose

Weirs are used to collect and retain gravel for spawning habitat, to deepen existing resting/jumping pools; to create new pools above and/or below the structure, to trap sediment, to aerate the water, and to promote deposition of organic debris.



**Log Weir**
**Perspective View**

## Limitations

Boulders or logs may not be available. The weirs may become barriers during low flows. Logs may eventually rot away. Boulder weirs may not perform well for funneling low flows because of their permeability.

## Materials

Select angular rocks as large or larger than those occurring naturally in the stream. Logs should be a durable native species (redwood, cedar, western laurel, aspen, cottonwood, or white fir). They should be at least 12 ft (3.7 m) longer than the channel width at the top of the weir.

## Installation

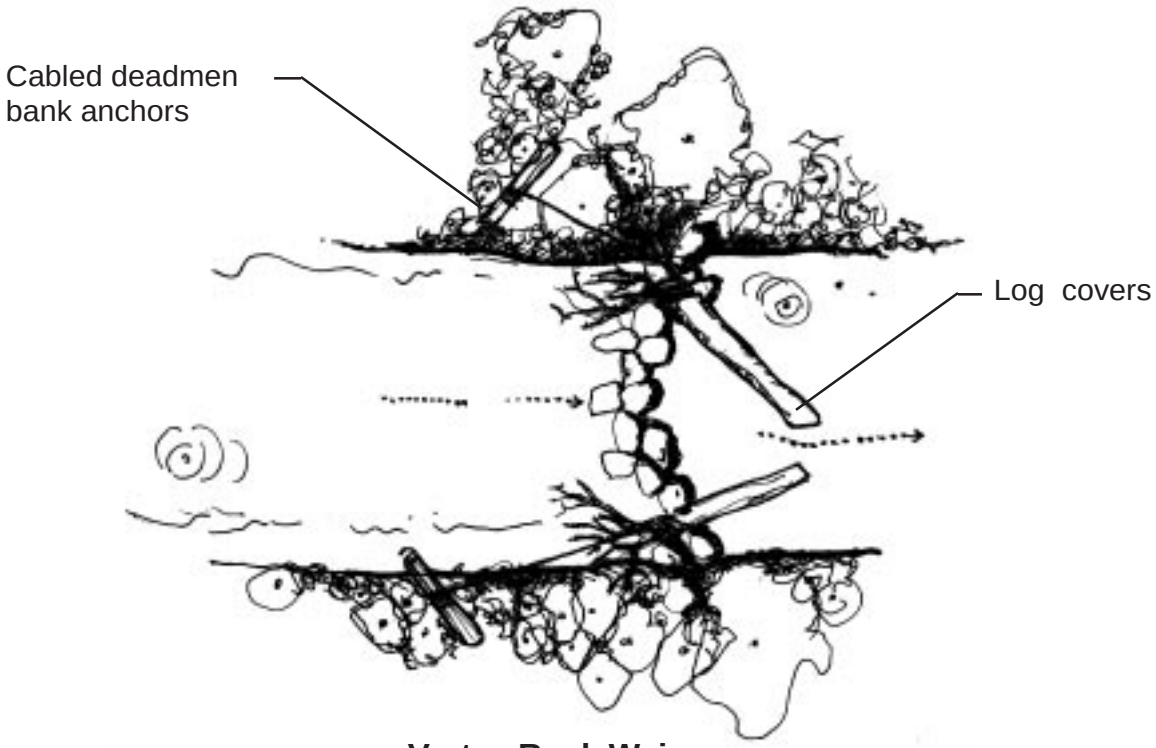
Minimize disturbance to the stream and adjoining areas by scheduling the work when it will interrupt aquatic plants and animals the least. Choose cross channel shapes to meet different needs. To create backwater, position weir straight across, perpendicular to flow. To redistribute scour and deposition patterns immediately downstream, use diagonal orientation. Downstream "V's" and "U's" improve trapping of gravel.

**Source:** Stream Corridor Restoration Handbook, USDA

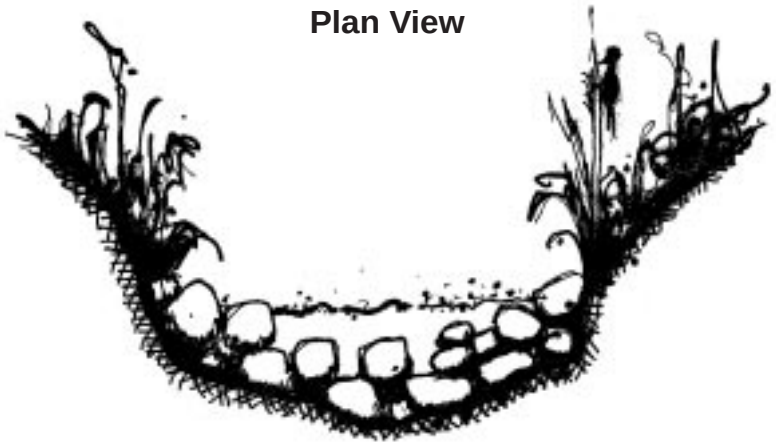
# BOULDER OR LOG WEIR

**Additional Considerations and Drawings:**

Upstream "V's" and "U's" provide mid-channel, scour pools below the weir for fish habitat, resting, and acceleration maneuvers during fish passage. Keep as much of the log wet at all times as possible to minimize rot. Ends of the weir should be extended to stable points 5-10 ft (1.5-3.0 m) on each bank to avoid flanking during high flows. Construct a protective dike or mound over the top of the keyed bank locations to prevent overbank flows from eroding the bank and circumventing the entire installation. Boulders ordinarily will need to be cabled together and anchored to fixed features.



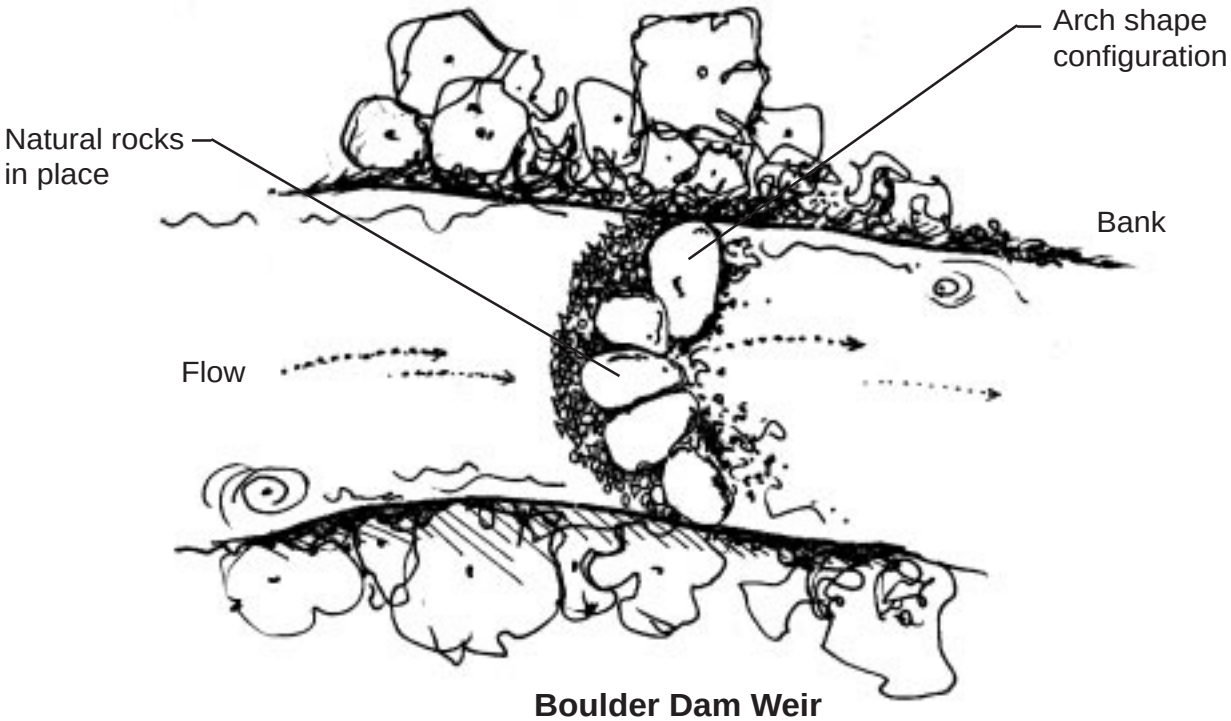

**Vortex Rock Weir**
**Plan View**



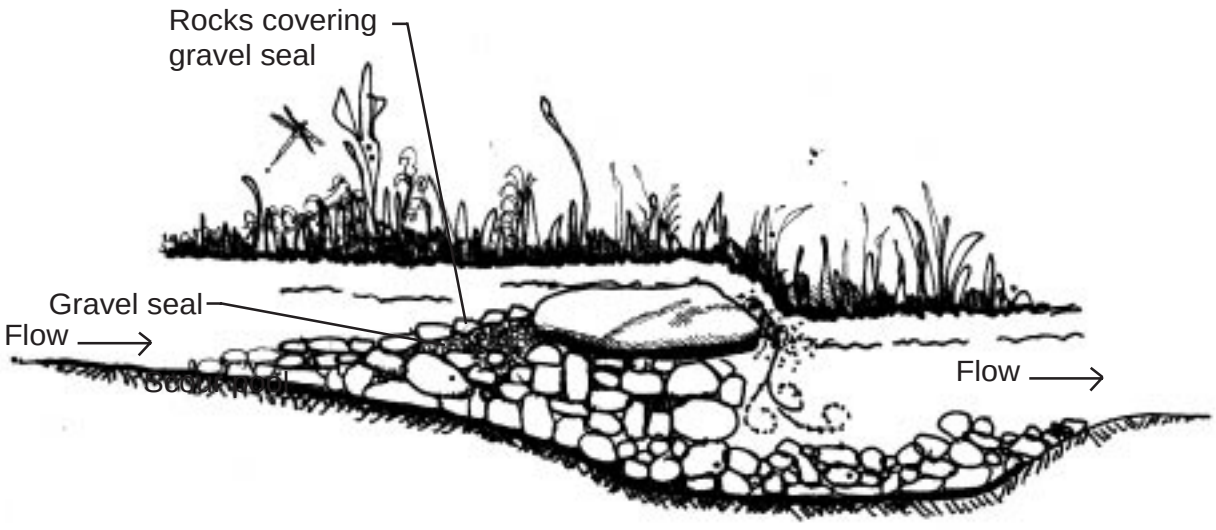
**Vortex Rock Weir**
**Section View**

# BOULDER OR LOG WEIR

**Additional Drawings:**



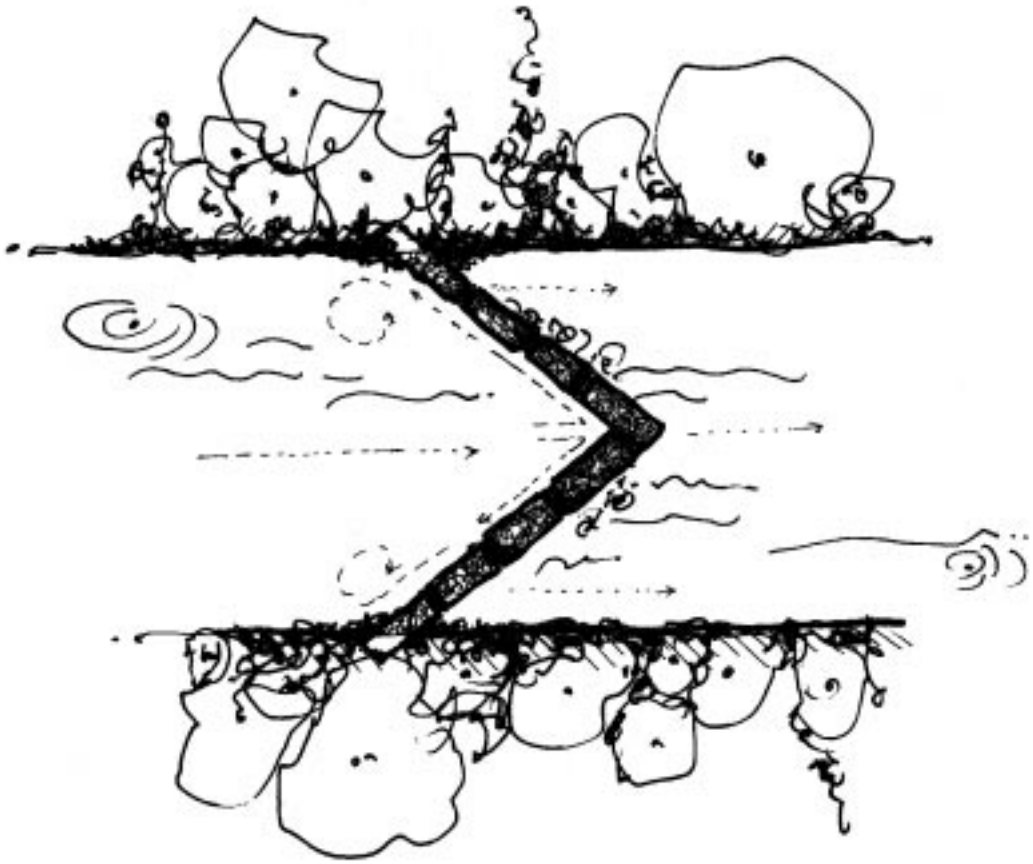

**Boulder Dam Weir**
**Plan View**



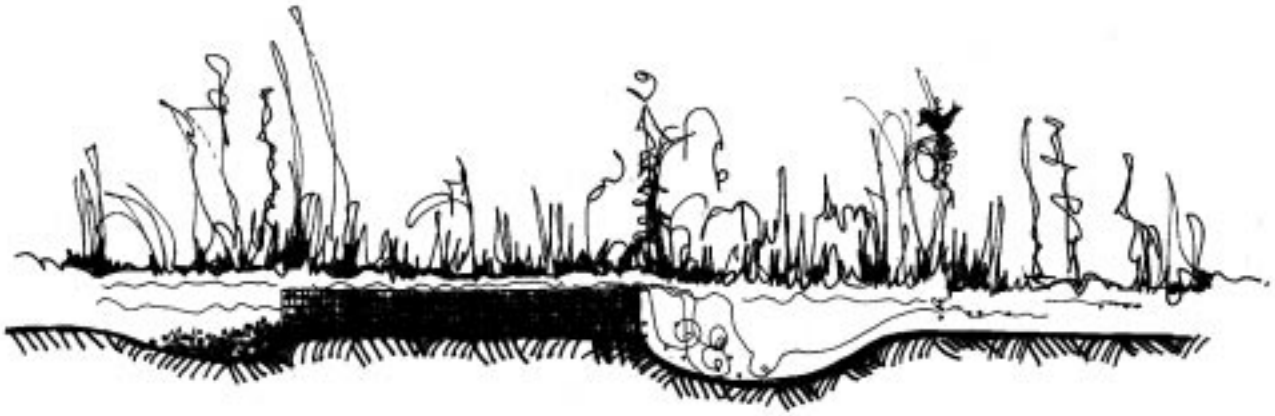

**Boulder Dam Weir**
**Section View**

# BOULDER OR LOG WEIR

**Additional Drawings:**



**V-shaped Rock Gabion Weir**
**Plan View**

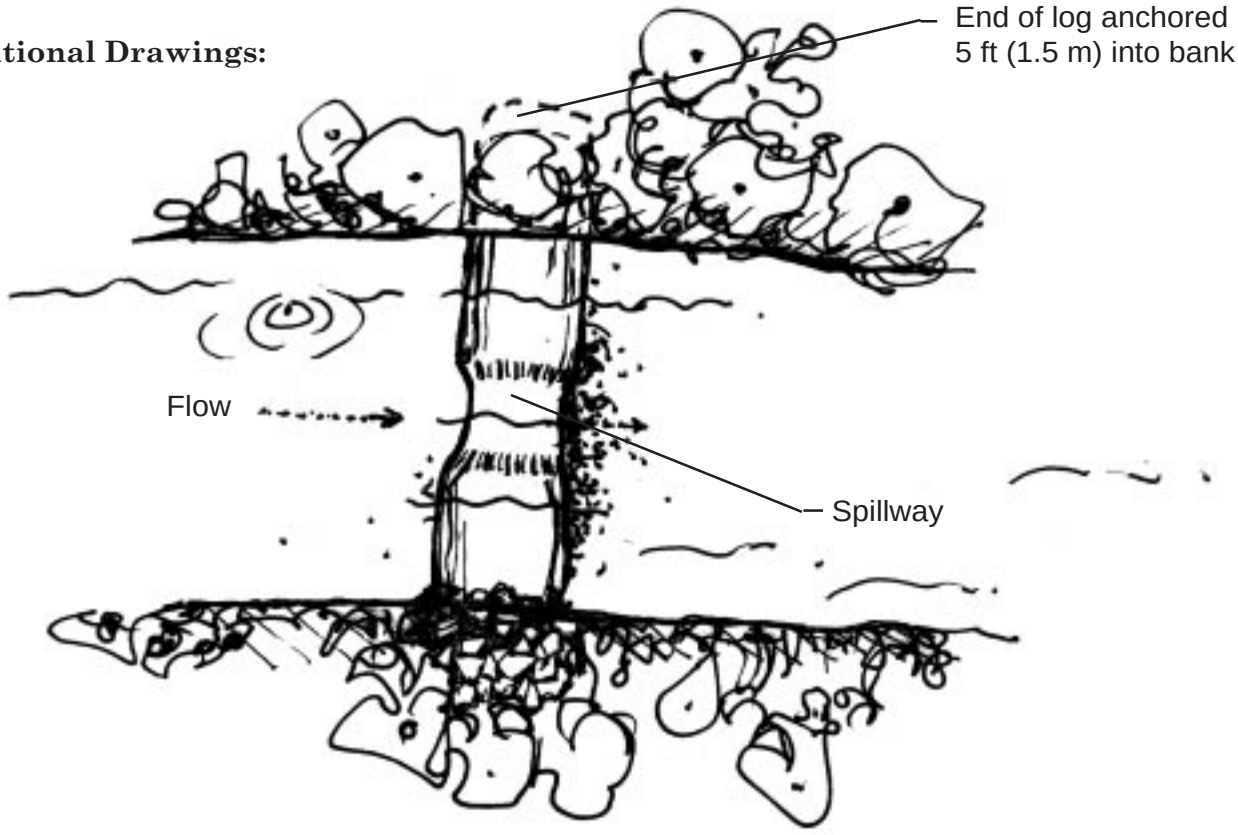


**Rock Gabion Weir**
**Section View**

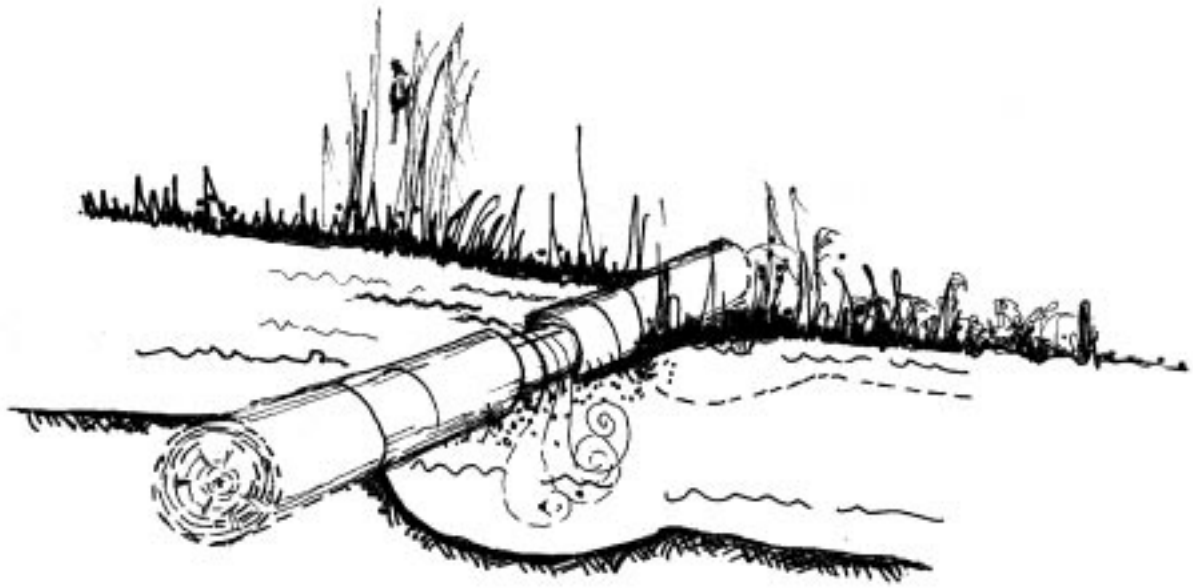
**Source:** Stream Corridor Restoration Handbook, USDA.

# BOULDER OR LOG WEIR

**Additional Drawings:**




**Single Log Dam Weir**
**Plan View**

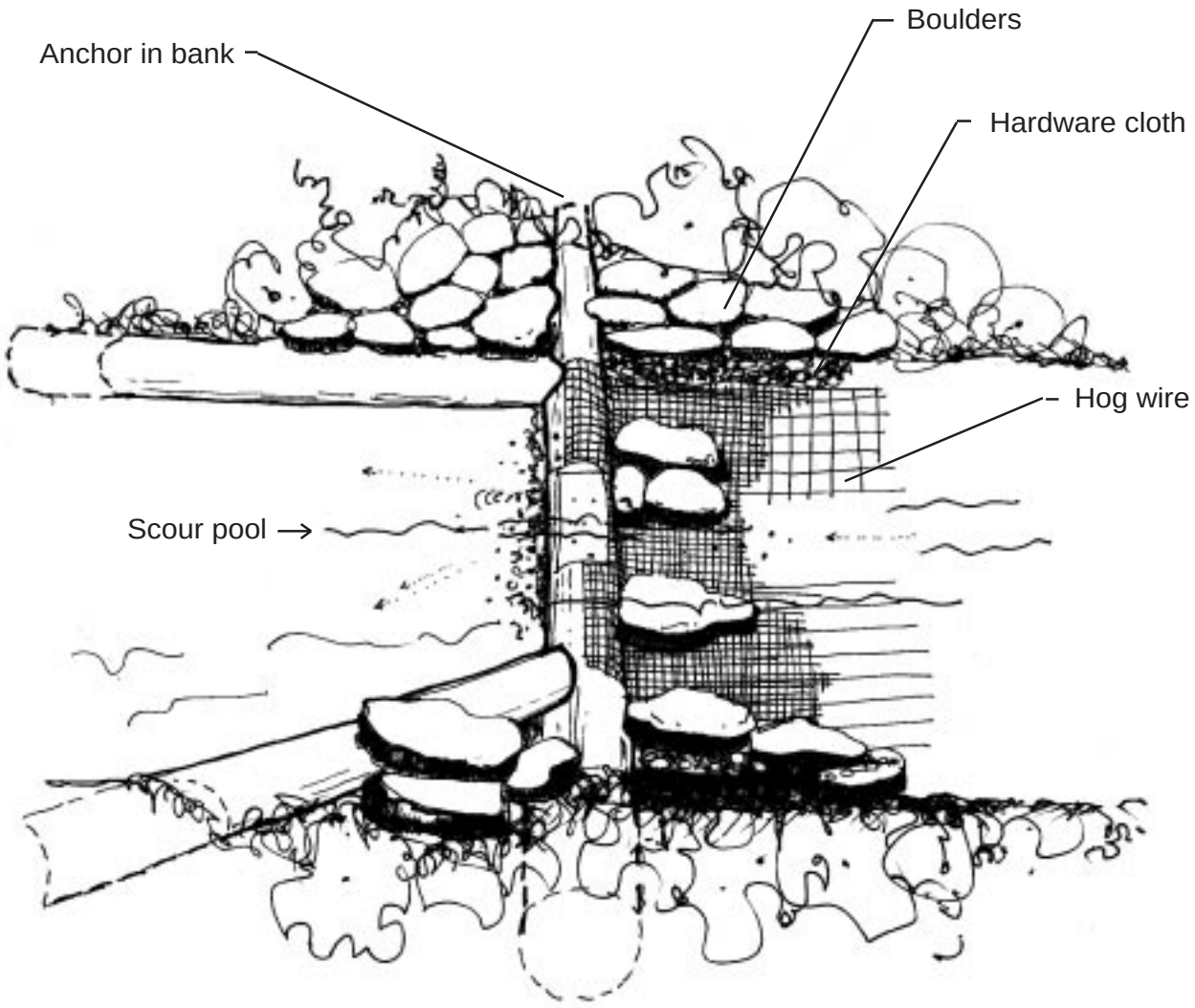


**Single Log Dam Weir**
**Section-Perspective View**

**Source:** Stream Corridor Restoration Handbook, USDA.

# BOULDER OR LOG WEIR

**Additional Drawings:**




**Log Weir K-Dam**
**Perspective View**